

## **Environmental Literacy Networking Project**

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## **Climate Change Adaptation Strategy: The Bologna Case**

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## 1. Introduction

In 2020, we launched the Environmental Literacy Networking Project in partnership with Yuva Association and Kyoto Club (Italy). Within the scope of the project funded by the European Union, we established the Environmental Literacy Network (ELN) with the participation of non-governmental organizations and local governments from Türkiye and the European Union. ELN has 80 members and is still recruiting new members.

The aim of ELN is to strengthen the cooperation of non-governmental organizations and local governments from Türkiye and the European Union in the field of environmental education and thus to contribute to the increase of "globally literate" individuals who can look critically at nature and human relations, develop ideas for solving these problems and exhibit responsible behavior and understanding within this framework.

This document is based on the outputs of the study visit we made to Bologna, Italy, on 3-7 April 2023 as representatives of ELN member organizations within the scope of the Environmental Literacy Networking Project.

During the study visit to Bologna, Scambi Europei, Camilla Food Cooperative, Kilowatt, CEFA Onlus, DumBo (Bologna's Multifunctional Event Space), Centro Antartide, Emilia-Romagna Regional Parliament, Bologna Municipality, FIU (City Innovation Foundation), Caracò, Hayat Onlus, Bologna Climate Assembly, Legacoop Bologna and Piazza Grande Social Cooperative were visited.

The overall aim of this document is to contribute to disseminating good examples of the development of climate change adaptation strategies that will contribute to the local policy-making process in Türkiye.

### **Environmental Literacy Networking Project**

Environmental Literacy Networking Project is a project implemented by Yuva Association (Türkiye) and Kyoto Club (Italy) within the framework of the European Union Civil Society Instrument and Media - Support to Networks and Platforms in Civil Society Programme. The Civil Society Networks and Platforms Support Programme aims to contribute to developing an active civil society by promoting more active democratic participation in policy and decision-making processes, fundamental rights, and a culture of dialogue and to strengthen active citizenship and civil society. The European Union finances it under the Instrument for Pre-Accession Assistance II (IPA II).

## **YUVA ASSOCIATION**

YUVA is an organization that has set out with the vision of creating a sustainable life and a fair, equal, poverty-free future that respects the rights of all living things and the generations after us.

It carries out activities for spreading sustainable lifestyles, poverty alleviation, and democratization through adult learning and supports participatory education methods.

Its fields of work can be summarised as follows:

- Development and implementation of ecology, human rights, and citizenship education and intercultural learning programs,
- Developing cooperation with adult learning institutions to increase participation in non-formal adult learning activities in Türkiye,
- Employment programs for disadvantaged communities and individuals to become self-sufficient and build a better future.

YUVA organizes public debates and events to promote a way of life that recognizes the interdependence of people and all living things, values diversity, is peaceful and inclusive, and actively advocates for equality, justice, and solidarity between people and all living things.

## **KYOTO CLUB**

Kyoto Club is a non-profit organization established in February 1999. Its members are non-governmental organizations, companies, local authorities, and governments working to achieve the 2030 greenhouse gas reduction targets set by EU countries under the Kyoto Protocol and the Paris Climate Agreement.

The Kyoto Club aims to promote the use of renewable energy sources and energy efficiency at all levels, to increase the environmental and sustainable development culture and good practices of commercial companies and local governments, and to advance greenhouse gas reduction strategies, sustainable mobility, and climate finance.

It promotes awareness-raising initiatives, knowledge sharing, and training to promote energy efficiency, the use of renewable energy sources, waste reduction and recycling, sustainable agriculture, and mobility to achieve its objectives and to support biological, green, and circular economy models.

Kyoto Club is a member of the European Alliance for Energy Saving (EU-ASE) and the European Council for an Energy Efficient Economy (ECEEE) and has observer status in the United Nations Framework Convention on Climate Change (UNFCCC).

## **2. International Cooperation in Combating Global Climate Change and Türkiye's Status**

The risk of global climate change, which has been the most important common problem of the world in recent years, was first raised at the international level at the World Climate Conference organized by the World Meteorological Organisation in 1979. In 1988, members of the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO) established the Intergovernmental Panel on Climate Change (IPCC) to make scientific assessments on climate change and to guide policymakers on this issue. In its assessment reports, the IPCC stated that climate change is linked to anthropogenic activities and that urgent action is needed to prevent global warming. In 1992, the IPCC's reports formed the basis for preparing the UN Framework Convention on Climate Change (UNFCCC). This convention established a platform for international cooperation to combat climate change. In 1997, the IPCC's reports contributed to the signing of the Kyoto Protocol,

which includes commitments by developed countries to reduce greenhouse gas emissions. In 2015, the Paris Agreement was adopted at the United Nations Climate Change Conference in Paris. This agreement includes the goal of keeping global warming below 2°C and, if possible, close to 1.5°C.

Countries that are parties to the UNFCCC come together every year under the name of Conference of the Parties (COP) to discuss policies and action plans related to climate change. In these conferences, issues such as the submission of National Contribution Declarations (NDCs) containing targets for reducing or limiting greenhouse gas emissions, the provision of financing, technology transfer and capacity-building support by developed countries to developing countries, adaptation to the impacts of climate change and the establishment of loss/damage mechanisms are discussed.

Türkiye became a party to the UNFCCC in 2004 and declared that it was a party to the Kyoto Protocol in 2009. In 2021, it ratified the Paris Agreement and contributes to the preparation of IPCC reports.<sup>1</sup>

In COP27, the last conference of the parties held in 2023, Türkiye updated its national contribution declaration and increased its mitigation target announced as 21 percent for 2030 to 41 percent within the framework of the new National Contribution Declaration. With the support of international funding sources, Türkiye started the preparations for the new National Climate Change Adaptation Strategy and Action Plan within the scope of the "Strengthening Climate Change Adaptation Action in Türkiye Project"<sup>2</sup> and local adaptation strategies and action plans of four pilot cities were developed within the scope of this project.

### **3. European Union and Italy Climate Change Adaptation Strategies**

#### **3.1. European Union Climate Change Adaptation Strategies**

The European Union has a long history of adaptation to climate change. In 2013, it adopted the first EU climate change adaptation strategy. This strategy aimed to increase the preparedness and capacity of all levels of government to respond to the impacts of climate change.

In 2018, the European Commission assessed the 2013 strategy and found that it had achieved its objectives but identified areas where further work was needed, such as improving knowledge, integrating adaptation into sectoral policies, closing the adaptation finance gap, and increasing global action.

In 2020, the European Commission launched a public consultation to gather stakeholder views on the new EU adaptation strategy announced under the European Green Deal. The European Green Deal is a set of policy initiatives aiming to become the first climate-neutral continent by 2050.

In 2021, the European Commission adopted the new EU climate change **adaptation strategy**<sup>3</sup>. This strategy sets out a long-term vision for the EU to become a climate-resilient society, fully adapted to the inevitable climate change impacts by 2050. The new strategy aims to make adaptation smarter, faster and more systemic and to increase international adaptation action.

The new strategy proposes 14 actions to achieve these objectives. These include improving information and data on climate risks and losses, developing and expanding Climate-ADAPT, the European platform for adaptation information, supporting policy development and implementation at all levels of government, integrating adaptation into macro-fiscal policy, promoting nature-based

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<sup>1</sup> [Türkiye Climate Change Strategy Document](#)

<sup>2</sup> [Strengthening Climate Change Adaptation Action in Türkiye Project](#)

<sup>3</sup> [EU climate change adaptation strategy](#)

solutions, accelerating adaptation action across sectors and regions, scaling up international financing and cooperation, and launching the European Climate and Health Observatory.

The new strategy aligns with the Paris Agreement, which recognizes adaptation as a key component of the global response to climate change and requires parties to increase their adaptive capacity, strengthen their resilience, and reduce their vulnerability. It is also consistent with the European Climate Act, which enshrines in law the goal of climate neutrality by 2050 and requires national adaptation strategies.

### **3.2. Italy Climate Change Adaptation Strategies**

Italy adopted its first National Adaptation Strategy (NAS) in 2015. This strategy aimed to identify a coherent national approach to deal with the impacts of climate change on natural systems and socio-economic sectors.

Under the coordination of the Ministry of Environment and Energy Security, with the participation of various stakeholders such as ministries, regions, local governments, research institutions, non-governmental organizations, and private sector representatives, it has updated its national strategy<sup>4</sup> for long-term adaptation to climate change.

NAS has identified six priority sectors for adaptation: water resources, hydrogeological systems, agriculture, forest fires, urban areas, and health. It also defined a set of targets and actions to increase the adaptive capacity and resilience of these sectors while reducing their vulnerability and exposure to climate risks.

The NAS was followed by the development of the National Adaptation Plan (NAP)<sup>5</sup>, which is being prepared by the Ministry of Environment and Energy Security. The NAP provides more detailed and operational guidance for the implementation of the NAS and for monitoring and evaluating its progress and effectiveness.

The NAP is also in line with the EU's harmonization policy framework. This framework consists of the EU Cohesion Strategy adopted in 2013 and reviewed in 2021 and the EU Climate Code adopted in 2021. The EU Adaptation Strategy aims to make Europe more resilient to the impacts of climate change by increasing knowledge, integrating adaptation into sectoral policies, closing the adaptation finance gap, and increasing international adaptation action.

### **4. Bologna City Review of Climate Change Adaptation Strategies**

In recent years, the city of Bologna has felt the effects of climate change, primarily through disasters such as landslides, collapses, or floods due to intense unpredictable meteorological events. Factors such as more frequent and intense rainfall, prolonged hot periods, and reduced water resources have a negative impact on the agricultural city of Bologna. Therefore, the city of Bologna has taken essential steps to develop climate change adaptation strategies.

The city has an economy based mainly on agriculture and food production. According to the European Commission, the cost of climate change maladaptation at European level ranges from €100 billion per year in 2020 to €250 billion per year in 2050.

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<sup>4</sup> [Italy National Climate Change Adaptation Strategy](#)

<sup>5</sup> [Italy National Climate Change Adaptation Plan](#)

As the impacts of climate change became more visible, Bologna joined the Mayors' Climate and Energy Charter<sup>6</sup> and started to develop climate strategies for adaptation and resilience to climate change.

The Municipality of Bologna has shaped its current climate change adaptation strategy through the BLUEAP<sup>7</sup> project, carried out in collaboration with Kyoto Club, Ambiente Italia, Arpa Emilia Romagna and the Kyoto Club under the Life Programme.

What makes the document innovative is the attempt to make management and stakeholders an instrument of territorial action. Based on the local climate profile and key risks, the local adaptation plan was developed with the participation of stakeholders. This plan includes concrete recommendations for action on climate change prevention and good practices to be adopted.

The City of Bologna Climate Change Adaptation Plan is a strategy that crosses administrative boundaries, considering issues such as watershed management or water supply, although the Local Adaptation Strategy defines criteria that preserve the content of adaptation strategies within the sphere of influence that the municipal administration can legitimately implement.

#### **4.1 City of Bologna Climate Change Adaptation Plan, Local Adaptation Strategy**

The City of Bologna Climate Change Adaptation Plan, Local Adaptation Strategy can be summarised under five headings.

##### **4.1.1. Adaptation and Governance**

The Bologna Local Cohesion Strategy<sup>8</sup> is in line with the European Union and the Italian National Cohesion Strategy and has been prepared through a participatory process in cooperation with citizens, public institutions, companies, educational institutions such as universities and schools, specialized agencies, service providers, multi-service providers, consortia, trade associations, consumer associations, environmental and territorial protection organizations, businesses and foundations. The role of stakeholders in implementing the strategy was defined, and active actions were planned.

Bologna is also the first city in Italy to include the city council participation mechanism tool and climate protection as a programmatic objective. The Citizens' Assembly created a participatory democratic strategy and plan by setting programmatic targets for climate protection and just ecological transition using participatory tools.

##### **4.1.2. Drought and Water Scarcity**

Bologna's climate change adaptation strategy focuses on the sustainable management of natural water resources. In this context, it aims to reduce water losses in distribution networks, reduce overuse of water resources by curtailing civil consumption, and reduce irrigation consumption and industrial water consumption. It also aims to prevent the mixing of sewage and clean and dirty water while improving surface flows and increasing water storage capacity. With the Suviana Dam, it plans to make arrangements aimed at providing support to the weak periods of the Reno River and to increase the regulation capacity of the Reno Basin. Utilizing water resources from less vulnerable basins.

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<sup>6</sup> [Mayors' Agreement on Climate and Energy](#)

<sup>7</sup> [BLUEAP project](#)

<sup>8</sup> [City of Bologna Climate Change Adaptation Plan, Local Adaptation Strategy](#)

The project aims to diversify water supply and protect agricultural production by substituting Po River water for Reno River water for agricultural use. In this context, it aims to take measures against climate change and plant health problems such as high temperatures, summer drought, spring frosts, heavy rainfall, hail, and cyclones.

#### **4.1.3. Heat Wave in Urban Areas**

Bologna is taking various steps to make urban life more sustainable. These include the protection and utilization of large wooded areas, increasing the number of green spaces and trees in built-up areas, and intensifying afforestation along roads, squares, and parks. In addition, the contribution of urban agriculture to climate change adaptation is being assessed. While insulation and greening of buildings are also among the priority targets, public buildings play a special role in this framework. In order to reduce exposure to health risks associated with high temperatures, the hot wave information and assistance system is being expanded. At the same time, the indoor microclimate is aimed to be improved. Reducing the health risks associated with air pollution is also envisaged as part of the strategy.

#### **4.1.4. Heavy Rainfall Events and Hydrological Risk**

Bologna is taking steps to protect the urban environment against heavy rainfall and hydrological risks. In this context, measures taken within the city, measures for new urban areas, and measures for public areas are the main elements of the strategy. It is also aimed to make the soil more resilient to heavy rainfall. To this end, measures to improve the water flow network include measures to improve runoff and reduce the risk of flooding. Likewise, reducing the water load of pollutants arising from rainfall is another issue considered within the scope of the strategy.

#### **4.1.5. Increasing the Resilience of Population and Assets at Risk**

Through hydrological monitoring activities, the situation of risky basins is closely monitored. At the same time, through efforts to improve emergency management, more effective and rapid response capabilities are being created for potentially risky situations. Infrastructure interventions are also part of the plan. In this way, the resilience of infrastructure is increased, and risks are reduced. The strategy also includes efforts to improve the resilience of cultural heritage.

### **4.2. BLUE AP - Bologna Local Urban Environmental Adaptation Plan for a Resilient Society**

BLUE AP - Bologna Local Urban Environmental Adaptation Plan for a Resilient City is a project supported by the "Life+" programme for the implementation of the Climate Change Adaptation Plan for the Municipality of Bologna, which includes concrete measures to make the city more resilient.

Bologna is one of the cities in Italy equipped with the necessary tools to face the problem of global warming, which has now become a priority for both public and private institutions. BLUEAP is also one of the city's key initiatives, including SEAP (Sustainable Energy Action Plan) and the Life GAIA project<sup>9</sup> (urban forestry).

It also complies with the framework of commitments undertaken on climate change-related issues. The project includes an intensive communication, dissemination, and networking activity to inform and raise awareness of citizens on climate change adaptation. The results of the project were also

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<sup>9</sup> [Life GAIA project](#)



disseminated at local, national, and European levels through the creation of communication tools and participation in national and international events.

The project has identified replicable and improvable objectives developed from the bottom up to find solutions to climate problems through the support of the local community, politicians, citizens, representatives of the production sector, etc.

These objectives are:

- To create an innovative information system that integrates environmental and social data capable of generating new knowledge about environmental risks and the best strategies to deal with them.
- To raise the awareness of local authorities, socio-economic actors, and citizens on the real risks of climate change in the Bologna region, motivating them to adopt more environmentally conscious behavior and responsible management of water resources.
- Provide technical and training support to local stakeholders to plan and implement some of the measures defined in the Adaptation Plan. (BLUE AP also played a "kick-off" role by launching pilot actions in the Bologna region, involving local businesses and actors).
- Monitor and evaluate the effectiveness and sustainability of the implemented measures; observe the results that emerged during the implementation of the project.
- To share and communicate the guidelines and results of the project and disseminate knowledge and experience in order to enable other local communities to use the models developed.

The participation process in the BLUE AP project can be considered as an important milestone in the fight against climate change in Bologna. This process of active participation of stakeholders raised awareness of climate change adaptation in the city and prepared citizens, civil society, and other stakeholders to deal with climate change. The results of the project can be a source of inspiration for other cities with similar conditions. This plan also marks a remarkable achievement in terms of its capacity to foster cooperation in medium-sized cities. The structure of the plan can be replicated in similar cities and provide an effective roadmap for tackling climate change. This process stands out as a success story developed through the participants' efforts.

#### **4.3. Bologna Climate Assembly**

On 6 February 2020, following the High Level Conference on Citizens' Participation in Cohesion Policy for Good Governance, the European Commission provided "core" funding to support innovative ideas and initiatives to promote citizen participation from smaller and local civil society. The aim was to test and promote new approaches to encourage citizen participation in Cohesion Policies, to ensure better implementation of projects, and to create a stronger sense of ownership of the results among citizens. The Emilia-Romagna Region, with the support of the European Commission and the OECD, launched a project to examine the applicability of citizen participation to new regional programs and an accountability strategy based on the Sustainable Development Goals.

Through this project, a Citizen Participation Guide<sup>10</sup> was developed, involving all networks, stakeholders, and partners, but also previously excluded people, people who do not belong to structured organizations, and people who are socially isolated or experiencing financial, social, and/or employment difficulties.

As an output of this project, the Bologna Climate Assembly<sup>11</sup> was established. The Bologna Climate Assembly is a democratic instrument coordinated by the Municipality of Bologna in collaboration with FIU (Fondazione Innovazione Urbana) Foundation<sup>12</sup>, Centro Antartide<sup>13</sup>, and randomly selected by lottery, aiming to directly involve citizens in the formulation and implementation of municipal policies and to strengthen the dialogue between citizens and the administration.

In the model of the Climate Assembly, 80 residents, selected by stratified random sampling (gender, age, and place of residence) from those registered on the municipal electoral lists, integrated in the sixteen and seventeen age groups, students from outside the city and subscribers of public transport in the city, selected from 20 residents, are involved in the participation process on a voluntary basis. They are informed in advance; meetings are organized during the consultation phase to ensure their full participation in formulating local policies and strategies.

## 5. Recommendations:

**Climate change is becoming an increasing threat. It is imperative for Türkiye to rapidly adapt to these changes and be prepared for these negative impacts. Measures should be taken, especially in the following areas:**

**a. Drought Management:** Drought risk increases with climate change. Local administrations should ensure sustainable management of water resources and raise public awareness of water saving.

**b. Disaster Preparedness:** The frequency of forest fires, floods, and other natural disasters is increasing. Local governments should create emergency plans and educate the public about these disasters.

**c. Green Infrastructure:** Protecting and increasing green areas is essential in combating climate change. Local governments should encourage green infrastructure projects and support the greening of cities.

### Participatory Approach Should be Developed:

Adopting a participatory approach is critical for the success of Sustainable Energy Climate Action Plans. Local governments can take the following steps:

**a. Valuing Community Views:** Local governments should take the views and concerns of the public and local stakeholders seriously and recognize these views as part of their plans.

**b. Education and Awareness Raising:** It is essential to raise public awareness on climate change and sustainability issues. Local governments can educate the public on these issues by organizing awareness-raising campaigns.

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<sup>10</sup> [Citizen Participation Guide](#)

<sup>11</sup> [Bologna Climate Assembly](#)

<sup>12</sup> [Fondazione Innovazione Urbana Foundation](#)

<sup>13</sup> [Centro Antartide](#)

c. **Cooperation with Civil Society Organisations:** Local governments can develop more comprehensive and effective action plans in cooperation with local civil society organizations.

#### **Public and NGO Cooperation should be Strengthened:**

Cooperation between public institutions and civil society organizations is important in combating climate change. Local governments can take the following steps to strengthen this cooperation:

**a. Regular Co-operation Meetings:** They can encourage information and experience sharing by organizing regular meetings between public and CSO representatives.

**b. Project Partnerships:** They can create a greater impact by developing joint projects and programs. For example, partnerships can be established for environmental protection projects or sustainable energy initiatives.

**c. Civil Society Engagement:** CSOs should be more involved in the policy-making processes of local governments. This can help to create more comprehensive and diversified solutions.

#### **Citizen Participation Should be Encouraged:**

Encouraging greater citizen participation in climate policy-making is fundamental to a democratic process. Local governments can increase participation by

**a. Community Meetings:** They can encourage the public to attend meetings of local governments regularly. Climate change-related issues can be addressed in these meetings.

**b. Online Participation Platforms:** Enabling citizens to share their views and suggestions through online platforms can lead to wider participation.

**c. Education and Awareness:** Organising education and awareness campaigns on climate change and sustainability issues can help the public become more aware of these issues.

#### **Information and Data Sharing:**

Reliable information and data are needed to create effective climate policies. Local governments can encourage information and data sharing by

**a. Open Data Platforms:** They can create open data platforms that facilitate access to public data.

**b. Scientific Collaboration:** They can collaborate with scientific organizations to develop policies based on current research.

**c. Education and Awareness Raising:** Raising public awareness based on science and data can help make decisions based on accurate information.

#### **Equality and Justice:**

Equality and justice are important in participatory processes. Local governments can ensure equality and justice by taking the following steps:

**a. Diversity and Inclusion:** They should create platforms where different social groups and minorities can make their voices heard.

**b. Equitable Resource Allocation:** Equitable distribution of resources enables everyone to participate.

**c. Social Justice Policies:** It is important that climate policies are designed to protect poor and disadvantaged groups.

#### **International Co-operation:**

Türkiye's fight against climate change requires not only national but also international cooperation. Local governments can contribute to international cooperation by

**a. Comparative Analyses:** They can learn the best practices by analyzing the practices of other countries.

**b. Climate Change Diplomacy:** They can contribute to the global problem by promoting Türkiye's climate policies in international platforms and cooperating with other countries.

**c. Knowledge and Experience Sharing:** More effective solutions can be found by sharing information and experience with other countries.

#### **Implementation of Action Plans:**

Effective implementation of action plans is the key to success. Local governments can realise their action plans by taking the following steps:

**a. Providing Critical Resources:** It is important to provide the necessary resources for the implementation of action plans. These resources can be financial, human, and technological.

**b. Monitoring and Evaluation:** Closely monitoring the implementation process and making regular evaluations ensures that success is monitored.

**c. Community Feedback:** Listening to the views of the public on the impact of action plans and taking this feedback into account can help to improve policies.

## **6. Sources**

1. [Türkiye Climate Change Strategy Document](#)
2. [Strengthening Climate Change Adaptation Action in Türkiye Project](#)
3. [EU Climate Change Adaptation Strategy](#)
4. [Italy National Climate Change Adaptation Strategy](#)
5. [Italy National Climate Change Adaptation Plan](#)
6. [Mayors' Agreement on Climate and Energy](#)
7. [BLUEAP Project](#)
8. [City of Bologna Climate Change Adaptation Plan, Local Adaptation Strategy](#)
9. [Life GAIA Project](#)
10. [Citizen Participation Guide](#)
11. [Bologna Climate Assembly](#)